

Amendments to the Specification:

Please replace the paragraph beginning on page 7, line 18, with the following amended paragraph:

With reference to the electrographic reproduction apparatus 10 as shown in FIG. 1A, an imaging drum 12 is provided on which is coated a photoconductive member 14. The imaging drum 12 is selectively rotated, by any well-known drive mechanism (not shown), in the direction indicated by the arrow, to advance the photoconductive member 14 past a series of subsystems of the electrographic reproduction apparatus 10. A primary charging device 16 is provided to deposit a uniform electrostatic charge onto the photoconductive member 14. The uniform charge on the photoconductive member 14 is subsequently selectively dissipated by, for example, a digitally addressed exposure subsystem 18, such as a Light Emitting Diode (LED) array or a scanned laser, to form an electrostatic latent image of a document to be reproduced. The electrostatic latent image is then rendered visible by development subsystem 20, which deposits charged, pigmented marking particles onto the photoconductive member 14 in accordance with the electrostatic charge pattern of the latent image. The developed marking particle image is then transferred to a receiver member 22 that has been fed from supply 24 onto ~~the~~ a transport belt 26. The electric field to transfer the marking particle image from the photoconductive member 14 to the receiver member 22 is provided by electrically biased roller 28. In FIG. 1A the receiver member 22 is shown on the transport belt 26 about to enter the nip between the photoconductive member 14 and the electrically biased roller 28. Cleaner 30 cleans any marking particles that are not transferred from the photoconductive member 14 to the receiver member 22. The receiver member 22 bearing the marking particle image is then transported through the nip formed between fuser roller 32 and pressure roller 34 wherein the marking particle image is fused by heat and pressure to the receiver member 22. FIG. 1B shows the receiver member about to enter the nip between the fuser roller 32 and the pressure roller 34.

Please replace the paragraph beginning on page 8, line 13, with the following amended paragraph:

The combination of elements including the imaging drum 12 on which is coated the photoconductive element 14, the primary charging device 16, the exposure subsystem 18, the development subsystem 20, the electrically biased roller 28, and the cleaner 30 will henceforth be referred to as the imaging module. The electrographic reproduction apparatus 10 depicted in FIGS. 1A - 1F could include a plurality of imaging modules in sequence along the length of the transport belt 26 for the purpose of creating and transferring different respective colored marking particle images to the receiver ~~element~~ member 22 in superimposed register. The present invention is equally applicable to an electrographic reproduction apparatus with one imaging module or with a plurality of imaging modules.

Please replace the paragraph beginning on page 8, line 24, with the following amended paragraph:

The fuser roller 32 is heated to a temperature high enough to fuse the marking particle image to the receiver member 22 as the receiver member 22 is passed through the nip with the side bearing the marking particle image in contact with the fuser roller 32. After exiting the fuser nip, if the print job calls for an image on just side one of the receiver member 22, the receiver member 22 is transported to output stack 36. If the print job calls also for an image on side two (the reverse side) of the receiver member 22, hereafter referred to as duplex printing, the receiver member 22 is not transported to the output stack 36, but rather is diverted to return path 38. FIG. 1C shows the receiver member 22 in the return path after exiting the fuser nip. In return path 38, a portion of the receiver member 22 is turned over in turnover device 40 and then returned to transport belt 26 whereupon a second marking particle image is transferred to side two of receiver member 22. FIG. 1D shows the receiver member 22 in the turnover device 40, FIG. 1E shows the receiver member 22 in a portion of the return path 38 after being turned over by the turnover device 40,

and FIG. 1F shows the receiver member 22 back on the transport belt 26 prior to having a marking particle image transferred to its side two. The receiver member 22 bearing the marking particle image on side two is then transported through the nip formed between fuser roller 32 and pressure roller 34 wherein the marking particle image on side two of the receiver member 22 is fused by heat and pressure to side two of the receiver member 22. After exiting the fuser nip the receiver member 22, with images on both sides, is transported to output stack 36.

Please replace the paragraph beginning on page 9, line 14, with the following amended paragraph:

In order to prevent the receiver member 22 with the fused marking particle image from sticking to the fuser roller 32 as it exits the nip between fuser roller 32 and pressure roller 34, release oil is applied to the fuser roller 32. After exiting the nip between the fuser roller 32 and pressure roller 34, a quantity of the release oil typically remains on the receiver member 22 on the side that contacted the fuser roller 32. During duplex printing, when transferring the marking particle image to side two of the receiver member 22, some of the fuser release oil remaining on side one, from fusing of the side one marking particle image, transfers to the transport belt 26 which is in contact with side one of the receiver member 22. During a long duplex printing run, a relatively large amount of fuser release oil can thereby accumulate on the transport belt 26.

Please replace the paragraph beginning on page 9, line 25, with the following amended paragraph:

During a printing run of the above process it is sometimes necessary to skip one or more imaging frames of ~~photoconductor~~ photoconductive member 14. Non-imaging skip frames are created by not feeding any receiver members 22 from supply 24 and inhibiting the digitally addressed exposure subsystem 18, such that no

pigmented marking particles are developed in the skip frames by development subsystem 20. One instance that non-imaging skip frames are required is during the production of multiple page, collated documents that are being duplex printed and the number of pages in the document is not equal to an integral of the number of pages it takes to fill the return path 38. Another instance requiring non-imaging skip frames is if sequential receiver members 22, fed from different supplies, require different fuser set points, and additional time is needed to change the fuser set points. During non-imaging skip frames, the photoconductive member 14 is in direct contact with the transport belt 26. As a result, fuser release oil accumulated on transport belt 26, as described above, transfers to photoconductive member 14. Fuser release oil can also transfer from transport belt 26 to photoconductive member 14 during cycle down at the end of a duplex printing run when photoconductive member 14 is again in direct contact with transport belt 26. Another opportunity for direct contact of ~~photoconductor element~~ photoconductive member 14 to ~~oil bearing~~ transport belt 26 bearing oil is during recovery from a receiver member jam during a duplex printing run. While purging receiver members 22 from the reproduction apparatus 10 after a shutdown due to a jam it is possible for direct contact of the photoconductive member 14 with the transport belt 26 during some frames.

Please replace the paragraph beginning on page 10, line 15, with the following amended paragraph:

The present invention prevents transfer of fuser release oil from transport belt 26 to photoconductive member 14 during non-imaging skip frames, cycle down, and jam recovery by depositing a uniform layer of marking particles onto photoconductive member 14 because it is during these times that photoconductive member 14 will be in direct contact with transport belt 26. A logic and control system within the reproduction apparatus 10 controls the image printing process previously described, including creating non-imaging skip frames as required, the cycle down sequence, and the recovery from jams of receiver ~~elements~~ members 22. The logic and control system will determine/detect that frames on the transport belt 26

containing fuser release oil will come into direct contact with the ~~photoconductor~~ photoconductive member 14 due to non-imaging skip frames, cycle down, or jam recovery. The logic and control system then adjusts the operating parameters of the imaging module so that a uniform layer of marking particles is deposited onto photoconductive ~~element~~ member 14 by development subsystem 20 corresponding to those direct contact frames of transport belt 26. For this purpose the imaging module operating parameters are set to a predetermined level so that the uniform layer of marking particles is at least a monolayer of the marking particles. The uniform layer of marking particles acts as a barrier to prevent transfer of fuser release oil from transport belt 26 to photoconductive member 14. The uniform layer of marking particles is transferred from the photoconductive member 14 directly to the transport belt 26 by biased transfer roller 28 and subsequently removed from transport belt 26 by scraper blade 42 and collected in receptacle 44. The fuser release oil from the transport belt 26 adheres to the marking particles and is removed along with the marking particles by scraper blade 42. Of course, in an alternate embodiment, this uniform layer of marking particles could be removed directly from the photoconductive member 14 without being transferred to the transport belt 26. Marking particle removal from the photoconductive member 14 then would be effected by the cleaner 30.

Please replace the paragraph beginning on page 11, line 11, with the following amended paragraph:

As described above, the transport belt 26 only accumulates fuser release oil during duplex printing when it comes into contact with the first side of receiver members 22 during the transfer of a developed marking particle image to the second side. Therefore, the method of the present invention may be activated only for non-imaging skip frames, cycle down, and jam recovery during duplex printing runs. In addition it has been determined that a minimum duplex printing run length is required before enough fuser release oil accumulates on the transport belt 26 to cause image quality defects. Therefore, the method of the present invention may be

activated only for non-imaging skip frames, cycle down, and jam recovery during duplex printing runs longer than this predetermined length.

Please replace the paragraph beginning on page 11, line 21, with the following amended paragraph:

The overall object of the present invention as described above is to prevent fuser oil contamination of ~~photoconductor element~~ photoconductive member 14. However, if an event should occur that is not anticipated by the logic and control system, during which the ~~photoconductor element~~ photoconductive member 14 is inadvertently contaminated with fuser release oil, another embodiment of the present invention provides a clean-up mode to reproduction apparatus 10. The clean-up mode is initiated, for example, automatically or by the reproduction apparatus operator if observed print quality defects are believed to be due to fuser release oil contamination. In the clean-up mode the operating parameters of the imaging module are adjusted so that a uniform layer of marking particles is deposited continuously onto photoconductive member 14 for a predetermined number of non-imaging cycles during which no receiver members 22 are fed from supply 24. The contaminating fuser release oil on photoconductive member 14 adheres to the marking particles and is carried away with the marking particles as the marking particles are transferred to transport web 26. The fuser release oil bearing marking particles are then removed from transport belt 26 by scraper blade 42 and collected in receptacle 44. The predetermined number of cycles in the clean-up mode is sufficient to thus remove the contaminating fuser release oil from photoconductive member 14 and thereby eliminate the print quality defects caused therefrom. As noted above, an embodiment may be provided where the marking particle layer is not transferred from the photoconductive member 14, but removed directly from the photoconductive member 14 by the cleaner 30.

Please replace the paragraph beginning on page 12, line 11, with the following amended paragraph:

In this embodiment, depicted in FIGS. 1A - 1F, the exemplary device for removing the uniform layer of marking particles from transport belt 26 is a scraper blade 42. Other well-known devices for cleaning marking particles from substrates in electrographic reproduction apparatus are vacuum assisted fiber brushes, electrically conductive fiber brushes, and magnetic brushes. All of these devices are well known in the art and therefore will not be described in detail here. All would serve equally well in place of the scraper blade 42 found in the above-recited embodiment.

Please replace the paragraph beginning on page 12, line 19, with the following amended paragraph:

FIGS. 2A - 2F illustrate a variation of the electrographic reproduction apparatus 10 in FIGS. 1A - 1F in which the present invention can also be practiced. All elements that are common to the two electrographic reproduction apparatus 10, 11 illustrated in FIGS. 1A - 1F and FIGS. 2A - 2F employ the same reference numerals. With reference to the electrographic reproduction apparatus 11 as shown in FIG. 2A, an imaging drum 12 is provided on which is coated a photoconductive member 14. The imaging drum 12 is selectively rotated, by any well-known drive mechanism (not shown), in the direction indicated by the arrow, to advance the photoconductive member 14 past a series of subsystems of the electrographic reproduction apparatus 11. A primary charging device 16 is provided to deposit a uniform electrostatic charge onto the photoconductive member 14. The uniform charge on the photoconductive member 14 is subsequently selectively dissipated by, for example, a digitally addressed exposure subsystem 18, such as a Light Emitting Diode (LED) array or a scanned laser, to form an electrostatic latent image of a document to be reproduced.

Please replace the paragraph beginning on page 13, line 3, with the following amended paragraph:

The electrostatic latent image is then rendered visible by development subsystem 20, which deposits charged, pigmented marking particles onto the photoconductive member 14 in accordance with the electrostatic charge pattern of the latent image. The developed marking particle image is then transferred from photoconductive member 14 to intermediate transfer member 15. The electric field to transfer the marking particle image from photoconductive member 14 to intermediate transfer member 15 is provided by an appropriate bias voltage applied to intermediate transfer member 15. Cleaner 30 cleans any marking particles that are not transferred from the photoconductive member 14 to the intermediate transfer member 15. The marking particle image is then transferred from intermediate transfer member 15 to a receiver member 22 that has been fed from supply 24 onto ~~the~~ a transport belt 26. The electric field to transfer the marking particle image from the intermediate transfer member 15 to the receiver member 22 is provided by electrically biased roller 28. In FIG. 2A the receiver member 22 is shown on the transport belt 26 about to enter the nip between the intermediate transfer member 15 and the electrically biased roller 28. Cleaner 31 cleans any marking particles that are not transferred from intermediate transfer member 15 to the receiver member 22. The receiver member 22 bearing the marking particle image is then transported through the nip formed between fuser roller 32 and pressure roller 34 wherein the marking particle image is fused by heat and pressure to the receiver member 22. FIG. 2B shows the receiver member 22 about to enter the nip between the fuser roller 32 and the pressure roller 34.

Please replace the paragraph beginning on page 13, line 26, with the following amended paragraph:

The combination of elements including the imaging drum 12 on which is coated the photoconductive member 14, intermediate transfer member 15, the primary charging device 16, the exposure subsystem 18, the development subsystem 20, the electrically biased roller 28, and the cleaner 30 will henceforth be referred to as the imaging module. The electrographic reproduction apparatus 11 depicted in FIGS. 2A - 2F could include a plurality of imaging modules in sequence along the length of the transport belt 26 for the purpose of creating and transferring different respective colored marking particle images to the receiver ~~element~~ member 22 in superimposed register. The present invention is equally applicable to an electrographic reproduction apparatus with one imaging module or with a plurality of imaging modules.

Please replace the paragraph beginning on page 14, line 5, with the following amended paragraph:

The fuser roller 32 is heated to a temperature high enough to fuse the marking particle image to the receiver member 22 as the receiver member 22 is passed through the nip with the side bearing the marking particle image in contact with the fuser roller 32. FIG. 2B shows the ~~intermediate~~ receiver member 22 about to enter the nip between the fuser roller 32 and the pressure roller 34. After exiting the fuser nip, if the print job calls for an image on just side one of the receiver member 22, the receiver member 22 is transported to output stack 36. If the print job calls also for an image on side two of the receiver member 22, hereafter referred to as duplex printing, the receiver member 22 is not transported to the output stack 36, but rather is diverted to return path 38. FIG. 2C shows the ~~intermediate~~ receiver member 22 in the return path 38 after exiting the fuser. In return path 38 the receiver member 22 is turned over in turnover device 40 and returned to transport belt 26 whereupon a second marking particle image is transferred to side two of receiver member 22. FIG.

2D shows the receiver member 22 in the turnover device 40, FIG. 2E shows the receiver member 22 in the return path 38 after being turned over by the turnover device 40, and FIG. 2F shows the receiver member 22 back on the transport belt 26 prior to having a marking particle image transferred to its side two. The receiver member 22 bearing the marking particle image on side two is then transported through the nip formed between fuser roller 32 and pressure roller 34 wherein the marking particle image on side two of the receiver member 22 is fused by heat and pressure to side two of the receiver member 22. After exiting the fuser nip the receiver member 22, with images on both sides, is transported to output stack 36.

Please replace the paragraph beginning on page 14, line 28, with the following amended paragraph:

In order to prevent the receiver member 22 bearing the fused marking particle image from sticking to the fuser roller 32 as it exits the nip between fuser roller 32 and pressure roller 34, release oil is applied to the fuser roller 32. After exiting the nip between the fuser roller 32 and pressure roller 34, a quantity of the release oil typically remains on the receiver member 22 on the side that contacted the fuser roller 32. During duplex printing, when transferring the marking particle image to side two of the receiver member 22, some of the fuser release oil remaining on side one, from fusing of the side one marking particle image, transfers to the transport belt 26 which is in contact with side one of the receiver member 22. During a long duplex printing run a relatively large amount of fuser release oil can thereby accumulate on the transport belt 26.

Please replace the paragraph beginning on page 15, line 7, with the following amended paragraph:

During a printing run of the above process it is sometimes necessary to skip one or more imaging frames of ~~photoconductor~~ photoconductive member 14. Non-imaging skip frames are created by not feeding receiver members 22 from supply 24 and inhibiting the digitally addressed exposure subsystem 18, such that no pigmented marking particles are developed onto said frames by development subsystem 20. One instance that non-imaging skip frames are required is during the production of a multiple page, collated document that are being duplex printed, and the number of pages in the document is not equal to an integral of the number of pages it takes to fill the return path 38. Another instance requiring non-imaging skip frames is if sequential receiver members 22, fed from different supplies, require different fuser set points, and additional time is needed to change the fuser set points. During non-imaging skip frames intermediate transfer member 15 is in direct contact with transport belt 26. As a result, fuser release oil accumulated on transport belt 26, as described above, transfers to intermediate transfer member 15. Fuser release oil can also transfer from transport belt 26 to intermediate transfer member 15 during cycle down at the end of a duplex printing run when intermediate transfer member 15 is again in direct contact with transport belt 26. Another opportunity for direct contact of intermediate transfer member 15 to ~~oil-bearing~~ transport belt 26 bearing oil is during recovery from a receiver jam during a duplex printing run. While purging receiver members 22 from the reproduction apparatus 11 after a shutdown due to a jam it is possible for direct contact of the intermediate transfer member 15 with the transport belt 26 during some frames. Fuser release oil contamination on the intermediate transfer member 15 will transfer to ~~photoconductor~~ photoconductive member 14 and cause image quality defects.

Please replace the paragraph beginning on page 15, line 31, with the following amended paragraph:

The invention prevents the transfer of fuser release oil from transport belt 26 to intermediate transfer member 15 during non-imaging skip frames, cycle down, and jam recovery by depositing a uniform layer of marking particles onto photoconductive member 14, then transferring the uniform layer of marking particles to the intermediate transfer member 15 to form a barrier between the intermediate transfer member 15 and the ~~oil-bearing~~ transport belt 26 bearing oil. The logic and control system within the reproduction apparatus 11 controls the image printing process previously described, including creating non-imaging skip frames as required, the cycle down sequence, and the recovery from jams of receiver elements members 22. The logic and control system will determine/detect ~~that~~ when frames on the transport belt 26 containing fuser release oil will come into direct contact with intermediate transfer member 15 due to non-imaging skip frames, cycle down, or jam recovery. The logic and control system then adjusts the operating parameters of the imaging module so that a uniform layer of marking particles is deposited onto the photoconductive member 14 by development subsystem 20, then transferring the uniform layer of marking particles to the intermediate transfer member 15 in areas that will directly contact the transport belt 26. For this purpose the imaging module operating parameters are set to a predetermined level so that the uniform layer of marking particles is at least a monolayer of the marking particles. The uniform layer of marking particles acts as a barrier to prevent transfer of fuser release oil from transport belt 26 to intermediate transfer member 15. The uniform layer of marking particles is transferred from the intermediate transfer member 15 directly to the transport belt 26 by biased transfer roller 28 and subsequently removed from transport belt 26 by scraper blade 42 and collected in receptacle 44. The fuser release oil from the transport belt 26 adheres to the marking particles and is removed along with the marking particles by scraper blade 42. As mentioned above, in an alternate embodiment, the uniform layer of marking particles could similarly be removed directly from the photoconductive member 14 or from the ~~intermediate transfer~~ member 15.

Please replace the paragraph beginning on page 16, line 28, with the following amended paragraph:

As described above, the transport belt 26 only accumulates fuser release oil during duplex printing when it comes into contact with the first side of receiver members 22 during the transfer of a developed marking particle image to the second side. Therefore, the method of the present invention may be activated only for non-imaging skip frames, cycle down, and jam recovery during duplex printing runs. In addition it has been determined that a minimum duplex printing run length is required before enough fuser release oil accumulates on transport belt 26 to cause image quality defects. Therefore, the method of the present invention may be activated only for non-imaging skip frames, cycle down, and jam recovery during duplex printing runs longer than this predetermined length.

Please replace the paragraph beginning on page 17, line 6, with the following amended paragraph:

The overall object of the present invention as described above is to prevent fuser oil contamination of intermediate transfer member 15. However, if an event should occur that is not anticipated by the logic and control system, during which the intermediate transfer member 15 is inadvertently contaminated with fuser release oil, another embodiment of the present invention provides a clean-up mode to the reproduction apparatus 11. The clean-up mode is initiated, for example, automatically or by the reproduction apparatus operator if observed print quality defects are believed to be due to fuser release oil contamination. In the clean-up mode the operating parameters of the imaging module are adjusted so that a uniform layer of marking particles is deposited continuously onto the photoconductive member 14, then transferred to intermediate transfer member 15 for a predetermined number of non-imaging cycles during which no receiver members 22 are fed from supply 24. The contaminating fuser release oil on intermediate transfer member 15 adheres to the marking particles and is carried away with the marking particles as the

marking particles are transferred to transport ~~web~~ belt 26. The fuser release oil bearing marking particles are then removed from transport belt 26 by scraper blade 42 and collected in receptacle 44. The predetermined number of cycles in the clean-up mode is sufficient to thus remove the contaminating fuser release oil from photoconductive member 14 and thereby eliminate the print quality defects caused therefrom. Again, as described above, an embodiment may be provided where the marking particle layer is not transferred from the photoconductive member 14 (or intermediate transfer member 15), but is similarly removed directly from the photoconductive member 14 (or intermediate transfer member 15).

Please replace the paragraph beginning on page 17, line 30, with the following amended paragraph:

In this embodiment depicted in FIGS. 2A - 2F the exemplary device for removing the uniform layer of marking particles from transport belt 26 is a scraper blade 42. Other well-known devices for cleaning marking particles from substrates in electrographic reproduction apparatus are vacuum assisted fiber brushes, electrically conductive fiber brushes, and magnetic brushes. All of these devices are well known in the art and therefore will not be described in detail here. All would serve equally well in place of the scraper blade 42 found in the above-recited embodiment.